

SEQUENCE LISTING



<110> Mitchell, Lloyd
 Garcia-Blanco, Mariano M.
 Puttaraju, Madaiah
 Mansfield, Gary S.

<120> METHODS OF COMPOSITIONS FOR USE IN
 SPLICEOSOME MEDIATED RNA TRANS-SPLICING

<130> A31304-BAE (072874.0156)

<140> 09/941,492

<141> 2001-08-29

<150> 09/838,858

<151> 2001-04-20

<150> 09/756,096

<151> 2001-01-08

<150> 09/158,863

<151> 1998-09-23

<150> 09/133,717

<151> 1998-08-13

<150> 09/087,233

<151> 1998-05-28

<150> 08/766,354

<151> 1996-12-13

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tccattcaaa aa
132

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29

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<213> Corynebacterium diphtheriae

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36

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ttcctgca
68

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tcgagaacat tattataacg ttgc
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35

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tgcttcaccc gggcctga
18

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ctcttctttt ttttcc
16

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caacgttata ataatgtt
18

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51

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<400> 17
cttctgtatt attctc
16

<210> 18
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29

<210> 20
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<400> 20
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36

<210> 21
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<212> DNA
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<400> 21
catcgtcata atttccttgt g
21

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<400> 22
atggaatcta cataaccagg
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<210> 23
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<210> 24
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<400> 24
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accggaattc atgaagccag gtacaccagg
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<400> 26
gggcaaggtg aacgtggatg
20

<210> 27
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<212> DNA
<213> Homo sapien

<400> 27
atcaggagtg gacagatcc
19

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<220>
<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

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gcatgaattc ggtacatgg gggggttctc atcatcatc
39

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<211> 36
<212> DNA
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<220>
<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

<400> 29
ctgaggatcc tcttacctgt aaacgcccac actgac
36

<210> 30
<211> 38
<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

<400> 30

gcatggtaac cctgcagggc ggcttcgtct gggactgg
38

<210> 31

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

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ctgaaagctt gttaacttat tatttttgac accagacc
38

<210> 32

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

<400> 32

gcatggtaac cctgcagggc ggcttcgtct aataatggga ctgggtg
47

<210> 33

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer complimentary to the beta
HCG6 gene (accession #X00266)

<400> 33

gcatggatcc tccggagggc ccctgggcac cttccac
37

<210> 34
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer complimentary to the beta
HCG6 gene (accession #X00266)

<400> 34
ctgactgcag ggtaaccgga caaggacact gcttcacc
38

<210> 35
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer complimentary to the beta
HCG6 gene (accession #X00266)

<400> 35
gcatggtaac cctgcagggg ctgctgctgt tgctg
35

<210> 36
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer complimentary to the beta
HCG6 gene (accession #X00266)

<400> 36
ctgaaagctt gttaaccagc tcaccatggt ggggcag
37

<210> 37
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

<400> 37
ggctttcgct acctggagag ac
22

<210> 38
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

<400> 38
gctggatgcg gcgtgcggtc g
21

<210> 39
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer complimentary to the
Escherichia coli lacZ gene

<400> 39
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20

<210> 40
<211> 45
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<400> 40
acctgggcc acccattatt aggtcattat ccgcggaaca ttata
45

<210> 41
<211> 35
<212> DNA
<213> Homo sapien

<400> 41
acctctgcag gtgaccctgc aggaaaaaaaa agaag
35

<210> 42
<211> 30
<212> DNA
<213> Homo sapien

<400> 42
acctctgcag acttcacttc taatgatgat
30

<210> 43
<211> 51
<212> DNA
<213> Homo sapien

<400> 43
acctgcggcc gcctaataatgat gatgatgatg atgctcttct agttggcatg c
51

<210> 44
<211> 32
<212> DNA
<213> Homo sapien

<400> 44
gacctctcga gggatttgagg gaattatttg ag
32

<210> 45
<211> 35
<212> DNA
<213> Homo sapien

<400> 45
ctgacctgcg gccgctacag tgttgaatgt ggtgc
35

<210> 46
<211> 35
<212> DNA
<213> Homo sapien

<400> 46
ctgacctgcg gccgccaac tatctgaatc atgtg
35

<210> 47
<211> 32

<212> DNA
<213> Homo sapien

<400> 47
gacctcttaa gtagactaac cgattgaata tg
32

<210> 48
<211> 21
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<400> 48
ctaatgatga tgatgatgat g
21

<210> 49
<211> 21
<212> DNA
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<400> 49
cgcctaata ga tgatgatgat g
21

<210> 50
<211> 21
<212> DNA
<213> Homo sapien

<400> 50
cttcttgga ctcctgtcct g
21

<210> 51
<211> 32
<212> DNA
<213> Homo sapien

<400> 51
gacctctcga gggatttggg gaattatttg ag
32

<210> 52
<211> 21
<212> DNA
<213> Homo sapien

<400> 52
aactagaagg cacagtcgag g
21

<210> 53
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Trans-spliced product containing human chorionic
gonadotropin gene 6 sequences and Corynebacterium
diphtheriae toxin A sequence

<400> 53
gagatgttcc agggcgtgat gatg
24

<210> 54
<211> 127
<212> RNA
<213> Artificial Sequence

<220>
<223> PTM intramolecular base paired stem

<221> misc_feature
<222> (57)...(70)
<223> Loop comprising a combination of 14 nucleotides
according to the specification

<400> 54
gcuagccugg gacaaggaca cugcuucacc cgguuaguag accacagccc ugagccnnnn
60
nnnnnnnnnn aucguuaacu aaauaacuac uaacugggug aacuucuguu uuuuucucga
120
gcugcag
127

<210> 55
<211> 127
<212> RNA
<213> Artificial Sequence

<220>
<223> PTM intramolecular base paired stem

<221> misc_feature

<222> (57)...(70)

<223> Loop comprising a combination of 14 nucleotides
according to the specification

<400> 55

gcuagccugg gacaaggaca cugcuucacc cgguuaguag accacagccc ugagccnnnn
60
nnnnnnnnnn aucguuaacu aaauaacuac uaacuggggug aacuucugua uuauucucga
120
gcugcag
127

<210> 56

<211> 127

<212> RNA

<213> Artificial Sequence

<220>

<223> PTM intramolecular base paired stem

<221> misc_feature

<222> (57)...(70)

<223> Loop comprising a combination of 14 nucleotides
according to the specification

<400> 56

gcuagccugg gacaaggaca cugcuucacc cgguuaguag accacagccc ugagccnnnn
60
nnnnnnnnnn aucguuaacu aaauaacuac uaacuggggug aaguucuguc cuugucucga
120
gcugcag
127

<210> 57

<211> 132

<212> DNA

<213> Artificial Sequence

<220>

<223> Trans-spliced product containing human chorionic
gonadotropin gene 6 sequences and Corynebacterium
diphtheriae toxin A sequences

<400> 57

caggggacgc accaaggatg gagatgttcc agggcgctga tgatgttggt gattcttctt
60
aatctttttg tgatggaaaa cttttcttcg taccacggga ctaaacctgg ttatgtagat
120

tccattcaaa aa
132

<210> 58
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial sequence derived from Escherichia coli
lacZ gene

<400> 58
gaattcggta ccatgggg
18

<210> 59
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial sequence derived from Escherichia coli
lacZ gene

<400> 59
cgtttacagg taagaggatc ctccggaggg ccc
33

<210> 60
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial sequence derived from Escherichia coli
lacZ gene

<400> 60
tggtgtcaaa aataataagt taacaagctt
30

<210> 61
<211> 25
<212> DNA
<213> Artificial Sequence

<220>

<223> Trans-spliced product containing Escherichia coli
lacZ and human chorionic gonadotropin gene 6
sequences

<400> 61
cagcagcccc tgtaaacggg gatac
25

<210> 62
<211> 286
<212> DNA
<213> Artificial Sequence

<220>
<223> Trans-spliced product containing Escherichia coli
lacZ gene sequences

<400> 62
ggctttcgct acctggagag acgcgcccgc tgatcctttg cgaatacgcc cacgcgatgg
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gtaacagtct tggcggtttc gctaaatact ggcaggcggt tcgtcagtat ccccgtttac
120
agggcggcctt cgtctaataa tgggactggg tggatcagtc gctgattaaa tatgatgaaa
180
acgggcaacc cgtggtcggc ttacggcggt gattttggcg atacgccgaa cgatcgccag
240
ttctgtatga acggtctggt ctttgccgac cgcacgccgc atccag
286

<210> 63
<211> 196
<212> DNA
<213> Artificial Sequence

<220>
<223> Trans-spliced product containing Escherichia coli
lacZ gene sequences

<400> 63
ggctttcgct acctggagag acgcgcccgc tgatcctttg cgaatacgcc cacgcgatgg
60
gtaacagtct tggcggtttc gctaaatact ggcaggcggt tcgtcagtat ccccgtttac
120
aggggctgct gctgttgctg ctgctgagca tgggcgggac atgggcatcc aaggagccac
180
ttcggccacg gtgccg
196

<210> 64
<211> 420
<212> DNA
<213> Artificial Sequence

<220>

<223> Trans-spliced product comprising cystic fibrosis
transmembrane regulator-derived sequences and His
tag sequences

<400> 64
gctagcgttt aaacgggccc acccatcatt attaggtcat tatccgcgga acattattat
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aacgttgctc gagtactaac tggaacctct tctttttttt cctgcagact tcacttctaa
120
tgatgattat gggagaactg gagccttcag agggtaaaat taagcacagt ggaagaattt
180
cattctgttc tcagttttcc tggattatgc ctggcaccat taaagaaaat atcatctttg
240
gcggccgcca ctgtgctgga tatctgcaga attccaccac actggactag tggatccgag
300
ctcggtacca aggttaagtt taaaccgctg atcagcctcg actgtgcctt ctagttgcca
360
gccatctgtt gtttgcccct cccccgtgcc ttccttgacc ctggaagggtg ccactccac
420

<210> 65
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Splice junction sequence

<400> 65
atgttccagg gcgtgatgat
20

<210> 66
<211> 6
<212> PRT
<213> Artificial Sequence

<220>

<223> Artificial sequence comprising sequences derived
from Escherichia coli lacZ gene

<400> 66
Asp Tyr Lys Asp Asp Lys
1 5

<210> 67
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial sequence comprising sequence derived
from Escherichia coli lacZ gene

<400> 67
ggagttgatc ccgtc
15

<210> 68
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Artificial sequence comprising sequences derived
from Escherichia coli lacZ gene

<400> 68
gcagtgtcct tgtgcggtta ccctgcaggg cggcttc
37

<210> 69
<211> 120
<212> DNA
<213> Artificial Sequence

<220>
<223> PTM binding domain of PTM

<400> 69
gattcacttg ctccaattat catcctaagc agaagtgtat attcttattt gtaaagattc
60
tattaactca tttgattcaa aatatttaaa atacttcctg tttcatactc tgctatgcac
120

<210> 70
<211> 24

<212> DNA
<213> Artificial Sequence

<220>
<223> Spacer sequence of PTM

<400> 70
aacattatta taacgttgct cgaa
24

<210> 71
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Branch point, pyrimidine tract and acceptor splice
site of PTM

<400> 71
tactaactgg tacctcttct tttttttttg atatcctgca gggcggc
47

<210> 72
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Donor site and spacer sequence of PTM

<400> 72
tgaacggtaa gtgttatcac cgatatgtgt ctaacctgat tcgggccttc gatacgctaa
60
gatccaccgg
70

<210> 73
<211> 260
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of spacer sequence

<400> 73
tcaaaaagtt ttcacataat ttcttacctc ttcttgaatt catgctttga tgacgcttct
60

gtatctatat tcatcattgg aaacaccaat gatttttctt taatgggtgcc tggcataatc
120
ctggaaaact gataacacaa tgaaattctt ccactgtgct taaaaaaacc ctcttgaatt
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ctccatttct cccataatca tcattacaac tgaactctgg aaataaaaacc catcattatt
240
aactcattat caaatcacgc
260

<210> 74
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide primer

<400> 74
cgctggaaaa acgagcttgt tg
22

<210> 75
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 75
actcagtgtg attccacctt ctc
23

<210> 76
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 76
gacctctgca gatttcactt ctaatgatga ttatgg
36

<210> 77
<211> 33
<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 77

ctaggatccc gttcttttgt tcttcactat taa
33

<210> 78

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 78

ctagggttac cgaagtaaaa ccatacttat tag
33

<210> 79

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 79

gcatgggttac cctgcagggg ctgctgctgt tgctg
35

<210> 80

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 80

ctgaaagctt gttaaccagc tcaccatggt ggggcag
37

<210> 81

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Binding domain of PTM molecule

<400> 81

acccatcatt attaggtcat tat
23

<210> 82

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 82

gatcaaattct gtcgatacctt cc
22

<210> 83

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 83

ctgatccacc cagtcccatt a
21

<210> 84

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 84

gactgatcca cccagtccca ga
22

<210> 85

<211> 52

<212> DNA

<213> Artificial Sequence

<220>

<223> Random sequence inserted to replace 3' splice site

<221> misc_feature

<222> (7)...(30)

<223> spacer sequence, see SEQ ID NO: 70

<400> 85

ccgcggnnnn nnnnnnnnnn nnnnnnnnnn gggttccggt accggcggct tc
52

<210> 86

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer

<400> 86

ttttatcccc gtttacaggg cggcttcgctc tgggactggg tggatcagtc gctgattaaa
60
tatgatgaaa a
71

<210> 87

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide

<400> 87

tttggcgata cgccgaacga tcgccagttc tgtatgaacg gtctgggtctt tgccgaccgc
60
acgccg
66

<210> 88

<211> 192

<212> DNA

<213> Artificial Sequence

<220>

<223> PTM sequence

<400> 88
acgagcttgc tcatgatgat catgggagag ttagaaccaa gtgaaggcaa gatcaaaca
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tccggccgca tcagcttttg cagccaattc agttggatca tgcccgggtac catcaaggag
120
aacataatct tcggcgtcag ttacgacgag taccgctatc gctcgggtgat taaggcctgt
180
cagttggagg ag
192

<210> 89
<211> 25
<212> DNA
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<220>
<223> Oligonucleotide

<400> 89
gagcaggcaa gacgagcttg ctcat
25

<210> 90
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 90
gagaacataa tcttcggcgt cagttacg
28

<210> 91
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 91
gtcagttgga ggaggacatc tccaagtttg
30

<210> 92

<211> 192
<212> DNA
<213> Artificial Sequence

<220>
<223> PTM exon 10

<400> 92
acgagcttgc tcatgatgat catgggcgag ttagaaccaa gtgaaggcaa gatcaaacat
60
tcgggccgca tcagcttttg cagccaattc agttggatca tgcccgggtac catcaaggag
120
aacataatct tcggcgtcag ttacgacgag taccgctatc gtcggtgat taaggcctgt
180
cagttggagg ag
192

<210> 93
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> PTM sequence

<400> 93
aaatatcatt ggtgtttctt atgatga
27

<210> 94
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 94
ccaactagaa gaggacatct ccaagtttgc
30

<210> 95
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 95
atgatcatgg gcgagttaga accaagtgag
30

<210> 96
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 96
aaaatatcat ctttggtggt tcctatg
27

<210> 97
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 97
ccaactagaa gaggacatct ccaagtt
27

<210> 98
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' Splice site

<400> 98
cgtttacagg taagtggatc c
21

<210> 99
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> 3' Splice site

<400> 99
ctgcagggcg gcttcgtcta ataatgg
27

<210> 100
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence from trans-splicing domain

<400> 100
tactaactgg tacctcttct tttttttttg atatcctgca gggcggc
47

<210> 101
<211> 1584
<212> DNA
<213> Artificial Sequence

<220>
<223> CFTR PTM

<400> 101
atgcagaggt cgcctctgga aaaggccagc gttgtctcca aacttttttt cagctggacc
60
agaccaattt tgaggaaagg atacagacag cgcctggaat tgtcagacat ataccaaatc
120
ccttctgttg attctgctga caatctatct gaaaaattgg aaagagaatg ggatagagag
180
ctggcttcaa agaaaaatcc taaactcatt aatgcccttc ggcgatgttt tttctggaga
240
tttatgttct atggaatctt tttatattta ggggaagtca ccaaagcagt acagcctctc
300
ttactgggaa gaatcatagc ttcctatgac ccggataaca aggaggaacg ctctatcgcg
360
atztatctag gcataggctt atgccttctc tttattgtga ggacactgct cctacaccca
420
gccatttttg gccttcatca cattggaatg cagatgagaa tagctatgtt tagtttgatt
480
tataagaaga ctttaaagct gtcaagccgt gttctagata aaataagtat tggacaactt
540
gttagtctcc tttccaacaa cctgaacaaa tttgatgaag gacttgcatt ggcacatttc
600
gtgtggatcg ctcttttgca agtggcactc ctcatggggc taatctggga gttgttacag
660

gcgtctgcct tctgtggact tggtttcttg atagtccttg ccctttttca ggctgggcta
 720
 gggagaatga tgatgaagta cagagatcag agagctggga agatcagtga aagacttggtg
 780
 attacctcag aaatgatcga gaacatccaa tctgttaagg catactgctg ggaagaagca
 840
 atggaaaaaa tgattgaaaa ctttaagacaa acagaactga aactgactcg gaaggcagcc
 900
 tatgtgagat acttcaatag ctcagccttc ttcttctcag ggttctttgt ggtgttttta
 960
 tctgtgcttc cctatgcact aatcaaagga atcatcctcc ggaaaatatt caccaccatc
 1020
 tcattctgca ttgttctgcg catggcgggc actcggcaat ttccctgggc tgtacaaaca
 1080
 tggatatgact ctcttggagc aataaacaaa atacaggatt tcttacaaaa gcaagaatat
 1140
 aagacattgg aatataactt aacgactaca gaagtagtga tggagaatgt aacagccttc
 1200
 tgggaggagg gatttgggga attatttgag aaagcaaac aaaacaataa caatagaaaa
 1260
 acttctaattg gtgatgacag cctcttcttc agtaatttct cacttcttgg tactcctgtc
 1320
 ctgaaagata ttaatttcaa gatagaaaga ggacagttgt tggcggttgc tggatccact
 1380
 ggagcaggca agacgagctt gctcatgatg atcatgggcg agttagaacc aagtgaaggc
 1440
 aagatcaaac attccggccg catcagcttt tgcagccaat tcagttggat catgcccggc
 1500
 accatcaagg agaacataat cttcggcgtc agttacgacg agtaccgcta tcgctcggtg
 1560
 attaaggcct gtcagttgga ggag
 1584

<210> 102

<211> 323

<212> DNA

<213> Artificial Sequence

<220>

<223> Trans-splicing domain of CFTR PTM

<400> 102

gtaagatatc accgatatgt gtctaacctg attcgggcct tcgatacgct aagatccacc
 60
 ggtcaaaaag ttttcacata atttcttacc tcttcttgaa ttcatgcttt gatgacgctt
 120
 ctgtatctat attcatcatt ggaaacacca atgatatttt ctttaatggg gcctggcata
 180

atcctggaaa actgataaca caatgaaatt cttccactgt gcttaatttt accctctgaa
240
ttctccattt ctcccataat catcattaca actgaactct ggaaataaaa cccatcatta
300
ttaactcatt atcaaatacac gct
323

<210> 103
<211> 165
<212> DNA
<213> Artificial Sequence

<220>
<223> PTM Binding domain

<400> 103
gctagcaata atgacgaagc cgcccctcac gctcaggatt cacttgccctc caattatcat
60
cctaagcaga agtgtatatt cttatttgta aagattctat taactcattt gattcaaaat
120
atttaaaata cttcctgttt cacctactct gctatgcacc cgcg
165

<210> 104
<211> 225
<212> DNA
<213> Artificial Sequence

<220>
<223> Trans-splicing domain of CFTR PTM

<400> 104
aataatgacg aagccgcccc tcacgctcag gattcacttg ccctccaatt atcatcctaa
60
gcagaagtgt atattcttat ttgtaaagat tctattaact catttgattc aaaatattta
120
aaatacttcc tgtttcacct actctgctat gcacccgcgg aacattatta taacgttgct
180
cgaatactaa ctggtacctc ttcttttttt tttgatatcc tgcag
225

<210> 105
<211> 3069
<212> DNA
<213> Artificial Sequence

<220>
<223> CFTR PTM sequence

<400> 105

acttcacttc taatgatgat tatgggagaa ctggagcctt cagagggtaa aattaagcac
60
agtggaagaa tttcattctg ttctcagttt tcctggatta tgcctggcac cattaaagaa
120
aatatcatct ttggtgtttc ctatgatgaa tatagatata gaagcgtcat caaagcatgc
180
caactagaag aggacatctc caagtttgca gagaaagaca atatagttct tggagaaggt
240
ggaatcacac tgagtggagg tcaacgagca agaatttctt tagcaagagc agtatacaaa
300
gatgctgatt tgtattttatt agactctcct tttggatacc tagatgtttt aacagaaaaa
360
gaaatatttg aaagctgtgt ctgtaaactg atggctaaca aaactaggat tttggtcact
420
tctaaaatgg aacattttaa gaaagctgac aaaatattaa ttttgcata aggtagcagc
480
tatttttatg ggacattttc agaactccaa aatctacagc cagactttag ctcaaaactc
540
atgggatgtg attctttcga ccaatttagt gcagaaagaa gaaattcaat cctaactgag
600
accttacacc gtttctcatt agaaggagat gctcctgtct cctggacaga aacaaaaaaaa
660
caatctttta aacagactgg agagtttggg gaaaaaagga agaattctat tctcaatcca
720
atcaactcta tacgaaaatt ttccattgtg caaaagactc ccttacaaat gaatggcatc
780
gaagaggatt ctgatgagcc tttagagaga aggctgtcct tagtaccaga ttctgagcag
840
ggagaggcga tactgcctcg catcagcgtg atcagcactg gccccacgct tcaggcacga
900
aggaggcagt ctgtcctgaa cctgatgaca cactcagtta accaaggtca gaacattcac
960
cgaaagacaa cagcatccac acgaaaagtg tcaactggccc ctcaggcaaa cttgactgaa
1020
ctggatatat attcaagaag gttatctcaa gaaactggct tggaaataag tgaagaaatt
1080
aacgaagaag acttaaagga gtgctttttt gatgatatgg agagcatacc agcagtgact
1140
acatggaaca cataccttcg atatattact gtccacaaga gcttaatttt tgtgctaatt
1200
tggtgcttag taatttttct ggcagaggtg gctgcttctt tggttgtgct gtggctcctt
1260
ggaaacactc ctcttcaaga caaagggaat agtactcata gtagaaataa cagctatgca
1320
gtgattatca ccagcaccag ttcgtattat gtgttttaca tttacgtggg agtagccgac
1380

actttgcttg ctatgggatt cttcagaggt ctaccactgg tgcataactct aatcacagtg
 1440
 tcgaaaattt tacaccacaa aatgttacat tctgttcttc aagcacctat gtcaaccctc
 1500
 aacacgttga aagcaggtgg gattcttaat agattctcca aagatatagc aattttggat
 1560
 gaccttctgc ctcttaccat atttgacttc atccagttgt tattaattgt gattggagct
 1620
 atagcagttg tcgcagtttt acaaccctac atctttgttg caacagtgcc agtgatagtg
 1680
 gcttttatta tggtgagagc atatttcctc caaacctcac agcaactcaa acaactggaa
 1740
 tctgaaggca ggagtccaat tttcactcat cttgttacia gcttaaaagg actatggaca
 1800
 cttcgtgcct tcggacggca gccttacttt gaaactctgt tccacaaagc tctgaattta
 1860
 catactgcca actgggttctt gtacctgtca aactgcgct ggttccaaat gagaatagaa
 1920
 atgatttttg tcatcttctt cattgctgtt accttcattt ccattttaac aacaggagaa
 1980
 ggagaaggaa gagttggtat taccctgact ttagccatga atatcatgag tacattgcag
 2040
 tgggctgtaa actccagcat agatgtggat agcttgatgc gatctgtgag ccgagtcttt
 2100
 aagttcattg acatgccaac agaaggtaaa cctaccaagt caaccaaacc atacaagaat
 2160
 ggccaactct cgaaagttat gattattgag aattcacacg tgaagaaaga tgacatctgg
 2220
 ccctcagggg gccaaatgac tgtcaaagat ctcacagcaa aatacacaga aggtggaaat
 2280
 gccatattag agaacatttc cttctcaata agtcctggcc agagggtggg cctcttggga
 2340
 agaactggat cagggaagag tactttgtta tcagcttttt tgagactact gaacactgaa
 2400
 ggagaaatcc agatcgatgg tgtgtcttgg gattcaataa ctttgcaaca gtggaggaaa
 2460
 gcctttggag tgataccaca gaaagtattt attttttctg gaacatttag aaaaaacttg
 2520
 gatccctatg aacagtggag tgatcaagaa atatggaaag ttgcagatga ggttgggctc
 2580
 agatctgtga tagaacagtt tcctgggaag cttgactttg tccttgtgga tgggggctgt
 2640
 gtcctaagcc atggccacaa gcagttgatg tgcttggcta gatctgttct cagtaaggcg
 2700
 aagatcttgc tgcttgatga acccagtgtc catttggtatc cagtaacata ccaaataatt
 2760
 agaagaactc taaaacaagc atttgctgat tgcacagtaa ttctctgtga acacaggata
 2820

gaagcaatgc tggaatgcca acaatTTTTg gtcatagaag agaacaaagt gcggcagtac
2880
gattccatcc agaaactgct gaacgagagg agcctcttcc ggcaagccat cagccccctcc
2940
gacaggggtga agctctttcc ccaccggaac tcaagcaagt gcaagtctaa gccccagatt
3000
gctgctctga aagaggagac agaagaagag gtgcaagata caaggcttca tcatcatcat
3060
catcattag
3069

<210> 106
<211> 131
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of mouse factor VIII PTM

<400> 106
ctcgagctta cctgaactaa ttttttagaa tattaatac ctaagctttt atatctctat
60
ccctctatct ttgctctct atccaatttt tattaactta gactttaaaa agaaacttat
120
gagaaaaatt t
131

<210> 107
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Spacer sequence of PTM

<400> 107
ccgcggaaca ttattataac gttgctcgaa tactaactgg tacctcttct tttttttttg
60
atatcctgca g
71

<210> 108
<211> 527
<212> DNA
<213> Artificial Sequence

<220>
<223> Chicken beta actin promoter sequences

<400> 108

ccatggtcga cgtagcccc acgttctgct tcactctccc catctccccc cctcccccac
60
ccccaatttt gtatttatatt attttttaaat tattttgtgc agcgatgggg gcggggggggg
120
gggggggggcg cgcgccaggc ggggcggggc ggggcgaggg gcggggcggg gcgaggcgga
180
gaggtgcggc ggcagccaat cagagcggcg cgctccgaaa gttcctttta tcgcgaggcg
240
gcggcgggcg cgccctata aaaagcgaag cgcgcggcg ccgggagtcg ctgcgacgct
300
gccttcgccc cgtgcccaacc tccgcctcga gcttacctga actaattttt tagaatatta
360
aatcctaag cttttataact cctatccctc tatcttttgc tctctatcca atttttatta
420
acttagactt taaaaagaaa cttatgagaa aaatttccgc ggaacattat tataacgttg
480
ctcgaatact aactggtacc tcttcttttt tttttgatat cctgcag
527

<210> 109

<211> 169

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence not included in construct

<400> 109

cgccgcctcg cgccgcccgc cccggctctg actgaccgcg ttactccac aggtgagcgg
60
gcgggacggc cttctcctc cgggctgtaa ttagcgcttg gtttaatcac ggcttgtttc
120
ttttctgtgg ctgcgtgaaa gccttgaggg gctccgggag gaattcgta
169

<210> 110

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> F8 PTM sequences

<400> 110

ggagtcgctg cgacgctgcc ttcgccccgt gccaacctcc gc
42

<210> 111
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> F8 PTM sequences

<400> 111
ctcgagcacc gatatcgtaa ct
22

<210> 112
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Exon 26, Flag tag, stop sequences of mouse factor
VIII PTM

<400> 112
gaggcccagc agcaatacga ctacaaggac gacgatgaca agtgagtta aac
53

<210> 113
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Spacer sequences of human or canine factor VIII
PTM

<400> 113
ccgcggaaca ttattataac gttgctcgaa tactaactgg tacctcttct tttttttttg
60
atatcctgca g
71

<210> 114
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Branch point and polypyrimidine tract sequences of

human papilloma virus PTM

<400> 114

tactaactgg tacctcttct tttttttttg atatacctgca gggcggc
47

<210> 115

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Branch point and polypyrimidine tract of human
papilloma virus PTM

<400> 115

tactaactgg tacctcttct tttttttttg atatacctgca gggcggc
47

<210> 116

<211> 80

<212> DNA

<213> Artificial Sequence

<220>

<223> Binding domain of human papilloma virus PTM

<400> 116

cagttaatac acctaattaa caaatcacac aacgctttgt tgtattgctg ttctaattgt
60
gttccataca cactataaca
80

<210> 117

<211> 149

<212> DNA

<213> Artificial Sequence

<220>

<223> Binding domain of human papilloma virus PTM

<400> 117

cagttaatac acctaattaa caaatcacac aacgctttgt tgtattgctg ttctaattgt
60
gttccataca cactataaca ataattgtcta tactcactaa ttttagaata aaacttttaa
120
catttatcac atacagcata tcgattccc
149

<210> 118
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of human papilloma virus PTM

<400> 118
gatgatctgc aacaagacat acatcgaccg gtcca
35

<210> 119
<211> 104
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of human papilloma virus PTM

<400> 119
cttcaggaca cagtggttt tgacagttaa tacacctaata taacaaatca cacaacggtt
60
tggtgtattg cagttctatg ttgttccata cacactataa caat
104

<210> 120
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of human papilloma virus PTM

<400> 120
gatgatctgc aacaagac
18

<210> 121
<211> 99
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of human papilloma virus PTM

<400> 121

gacacagtgg cttttgacag ttaatacacc taattaacaa atcacacaac ggtttgttgt
60
attgcagttc taatgttggt ccatacacac tataacaat
99

<210> 122
<211> 138
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of human papilloma virus PTM

<400> 122
gatgatctgc aacaagacat acatcgaccg gtccacttca ggacacagtg gcttttgaca
60
gttaatagac ctaattaaca aatcacacaa cggtttgttg tattgcagtt ctaatgttgt
120
tccatacaca ctataaca
138

<210> 123
<211> 89
<212> DNA
<213> Artificial Sequence

<220>
<223> Binding domain of human papilloma virus PTM

<400> 123
gatgatctgc aacaagacga cacagtgggt ttgacagtt aatacaccta attaacaat
60
cacacaacgg ttgttgtat tgcagttct
89

<210> 124
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Trans-spliced product

<400> 124
agaatgtgtg tactgcaagc aacagttact gcgacgtgag ggcggcttcg tctgggactg
60
ggtgga
66

<210> 125

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<223> Trans-spliced product

<400> 125

gtgtactgca agcaacagtt actgcgacgt gagggcggct tcgtctggga ctgggtggat

60

cagtcgctga t

71